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EXAMINER

NORTON, JENNIFER L

ART UNIT	PAPER NUMBER
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2121

DATE MAILED: 02/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/766,003

Applicant(s)

MOSS, ANDREW J.

Examiner

Jennifer L. Norton

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. The following is a 2nd Non-Final Office Action in response to the Amendment received on December 28, 2005. Claims 1-16 are pending.

Drawings

2. The amendment to the Specification was received on December 28, 2005. The correction is acceptable and the objection to the Drawings is withdrawn.

Specification

3. The amendment to the Specification was received on December 28, 2005. The Specification is acceptable.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-3, 5, 7-9, 11 and 13-16 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No.: 3,856,034 (hereinafter Itoh).
6. As per claim 1, Itoh discloses a control system for supplying a control signal to a controlled apparatus the system comprising:

an error generation means (Fig. 1, element 6) operable to produce an error signal (col. 3, lines 20-27 and Fig. 1, element x_{s-x}) from a feedback value (col. 3, lines 20-24 and Fig. 1, element 5) relating to a measured operating parameter (Fig. 1, element 4 and x) of a controlled apparatus (col. 1, lines 23-27 and col. 3, lines 24-27), and a required value (Fig. 1, element x_s) relating to a desired operating parameter value of the controlled apparatus (col. 1, lines 18-23 and col. 3, lines 24-27); and

a controller (Fig. 1, element 1, 2 and 3) operable to receive the error signal (Fig. 1, element x_{s-x}) and a gain signal (Fig. 1, element G_1, G_2 , and G_3), and to output a control signal in dependence upon the values thereof, wherein a gain selection means is provided (col. 3, lines 28-64), which gain selection means is operable to receive the error signal (Fig. 1, element x_{s-x}) and to output a gain signal (col. 3, lines 58-60) to the controller (Fig. 1, element 1, 2 and 3) in dependence upon the value of the error signal (col. 3, lines 8-63 and Fig. 1, element x_{s-x}).

The examiner emphasizes that all anticipated components and limitations of claim 1 are present in Itoh. The controllers are operable to receive the error signal and gain signal, to output a control signal. The controller via the controller receives the gain signal in dependence upon the error signal, in which the two signals (error and gain) are combined to represent the control signal, (col. 3, lines 8-63).

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7. As per claim 2, Itoh discloses the controller (Fig. 1, element 1, 2 and 3) is operable to output a signal equivalent to the error signal multiplied by the gain signal (col. 3, equations 1-6).

8. As per claim 3, Itoh discloses a system as set forth above, wherein the error signal (Fig. 1, element x_{s-x}) equals the difference between the required value (Fig. 1, element x_s) and the feedback value (col. 2, lines 12-24, col. 3, lines 24-27 and Fig. 1, element x).

9. As per claim 5, Itoh discloses a disturbance compensation means (Fig. 1, feedback control loop with cascade compensator configuration) is provided which is operable to receive an input value relating to at least one other parameter value of the controlled apparatus, and to receive the error signal, and to produce a compensated error signal in dependence upon the input value and the error signal, and to supply the compensated error signal to the filter means or the gain selection means in place of the error signal (col. 3, lines 8-27). It is inherent that feedback control systems are used to compensate for disturbances or unwanted inputs of a system (Nise, pg. 350).

10. As per claim 7, Itoh discloses a method for controlling a controlled apparatus having a measured operating parameter, the method comprising:

generating an error signal (Fig. 1, element 6 and x_{s-x}) from a feedback value (col. 3, lines 20-24 and Fig. 1, element 5) relating to a measured operating

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parameter value (Fig. 1, element 4 and x) of a controlled apparatus (col. 1, lines 23-27 and col. 3, lines 24-27), and a required value (Fig. 1, element x sub. s) relating to a desired value of the operating parameter of the controlled apparatus (col. 1, lines 18-23 and col. 3, lines 24-27); and

generating a control signal in dependence upon the error signal (Fig. 1, element x sub. s - x) and a received gain signal (Fig. 1, element G sub. 1, G sub. 2, and G sub. 3), wherein the gain signal is selected in dependence upon the error signal (col. 3, lines 8-63 and Fig. 1, element x sub. s - x).

The examiner emphasizes that all anticipated components and limitations of claim 7 are present in Itoh. The controllers are operable to receive the error signal and gain signal, to output a control signal. The controller via the controller receives the gain signal in dependence upon the error signal, in which the two signals (error and gain) are combined to represent the control signal, (col. 3, lines 8-63).

11. As per claim 8, Itoh discloses the control signal is equivalent to the error signal multiplied by the gain signal (col. 3, equations 1-6).

12. As per claim 9, Itoh discloses the error signal (Fig. 1, element x sub. s - x) equals the difference between the required value (Fig. 1, element x sub. s) and the feedback value (col. 2, lines 12-24, col. 3, lines 24-27 and Fig. 1, element x).

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13. As per claim 11, Itoh discloses a compensated error signal (Fig. 1, element x sub. s – x) is produced using a disturbance compensation means (Fig. 1, feedback control loop with cascade compensator configuration) which is operable to receive an input value relating to at least one other parameter value of the controlled apparatus, and to receive the error signal, and to produce the compensated error signal in dependence upon the input value and the error signal, the compensated error signal being supplied in place of the error signal (col. 3, lines 8-27). It is inherent that feedback control systems are used to compensate for disturbances or unwanted inputs of a system (Nise, pg. 350).

14. As per claim 13, Itoh discloses a gas turbine engine controller including a control system (col. 1, lines 3-8).

15. As per claim 14, Itoh discloses a controller wherein the measured operating parameter is temperature (col. 3, lines 10-16).

16. As per claim 15, Itoh discloses as set forth above, a method of controlling a gas turbine engine (col. 1, lines 3-8).

17. As per claim 16, Itoh discloses as set forth above, the measured operating parameter is temperature (col. 3, lines 10-16).

Claim Rejections - 35 USC § 103

18. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

19. Claims 4 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Itoh in view of U.K. Patent No.: 1,135,508 (referred to as hereinafter IBM (International Business Machines)).

20. As per claim 4, Itoh does not expressly teach a filter means is provided which is operable to filter the error signal (Fig. 1, element x sub. s – x) and to supply a filtered error signal to the gain selection means in place of the error signal.

IBM teaches to a connection between a high pass filter (Fig. 1, element 23) and the output of a summing device (Fig. 1, element 9), and the high pass filter output to the amplifier to produce a gain (pg. 4, lines 9-12).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to modify the teaching of Itoh to include a filter means that is operable to filter the error signal and to supply a filtered error signal to the gain selection means in place of the error signal to modify the abrupt nature of change in the

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position of a set point to allow the system to respond to the set point change more gradually (pg. 2, lines 12-20).

21. As per claim 10, Itoh does not expressly teach the error signal (Fig. 1, element x sub. s - x) is filtered and a filtered error signal is used to select the gain signal in place of the error signal.

IBM teaches to a connection between a high pass filter (Fig. 1, element 23) and the output of a summing device (Fig. 1, element 9), and the high pass filter output to the amplifier to produce a gain (pg. 4, lines 9-12).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to modify the teaching of Itoh to include the error signal is filtered and a filtered error signal is used to select the gain signal in place of the error signal to modify the abrupt nature of change in the position of a set point to allow the system to respond to the set point change more gradually (pg. 2, lines 12-20).

22. Claims 6 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Itoh in view of U.S. Patent No.: 4,349,868 (hereinafter Brown).

23. As per claim 6, Itoh teaches the disturbance compensation means (Fig. 1, feedback control loop with cascade compensator configuration) and a multiplier (Fig. 1,

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element 1, 2 and 3) for receiving a compensation value, and for multiplying the error signal (Fig. 1, element x sub. $s - x$) by the compensation value to produce the compensated error signal (col. 3, equations 1-6). It is inherent that feedback control systems are used to compensate for disturbances or unwanted inputs of a system (Nise, pg. 350).

Itoh does not expressly teach the disturbance compensation means comprises a lookup table for receiving the input value, and a multiplier for receiving a compensation value from the lookup table, and for multiplying the error signal by the compensation value to produce the compensated error signal.

Brown discloses a look-up table that includes a wide range of values to receive an input value, and provide an actual gain control function for each input (pg. 2, lines 16-18 and col. 9, lines 59-63).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to modify the teaching of Itoh to include disturbance compensation means comprises a lookup table for receiving the input value to optimize the control loop (pg. 13, lines 54-58).

24. As per claim 12, Itoh teaches the disturbance compensation means (Fig. 1, feedback control loop with cascade compensator configuration) and a multiplier (Fig. 1,

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element 1, 2 and 3) for receiving a compensation value, and for multiplying the error signal (Fig. 1, element x sub. $s - x$) by the compensation value to produce the compensated error signal (col. 3, equations 1-6). It is inherent that feedback control systems are used to compensate for disturbances or unwanted inputs of a system (Nise, pg. 350).

Itoh does not expressly teach the disturbance compensation means comprises a lookup table for receiving the input value, and a multiplier for receiving a compensation value from the lookup table, and for multiplying the error signal by the compensation value to produce the compensated error signal.

Brown discloses a look-up table that includes a wide range of values to receive an input value, and provide an actual gain control function for each input (pg. 2, lines 16-18 and col. 9, lines 59-63).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to modify the teaching of Itoh to include disturbance compensation means comprises a lookup table for receiving the input value to optimize the control loop (pg. 13, lines 54-58).

Response to Arguments

25. Applicant's arguments, see pgs. 4-6, filed December 28, 2005, with respect to the rejection(s) of claim(s) 1, 3, 5, 7, 9 and 11, 13 and 14-16 under 35 U.S.C 102(b) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of U.S. Patent No.: 3,856,034 and U.S. Patent No.: 4,349,868.

26. Applicant's arguments, see pg. 6, filed December 28, 2005 with respect to the rejection(s) of claim(s) 2, and 8 under 35 U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of U.S. Patent No.: 3,856,034.

27. Applicant's arguments, see pg. 7, filed December 28, 2005 with respect to the rejection(s) of claim(s) 4 and 10 under 35 U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of U.S. Patent 3,856,034 in further view of U.K. Patent No.: 1,135,508.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer L. Norton whose telephone number is 571-272-3694. The examiner can normally be reached on 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Knight can be reached on 571-272-3687. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Anthony Knight
Supervisory Patent Examiner
Art Unit 2121